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AUTHOR Smith, Elizabeth T.; Selfe, Cynthia L.
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ABSTRACT

Although most segments of the American workforce now recognize that computers can reduce the drudgery of repetitive tasks and lighten the burden of information exchange, storage, and retrieval, some people, especially many humanists, social scientists, and other non-technically oriented professionals, remain hesitant to step into the computer age. Computer use is often avoided because the unfamiliar and unpleasant terminology is intimidating to many people, and because the way that language is used to compare people and computers alienates them. A 1982 survey of the English Department at Michigan Technological University showed minimal computer usage. Five years later, however, another survey indicated much more usage, an increase in positive attitudes about computers, and a decrease in negative attitudes. These changes, reflected throughout the nation, can be attributed to many factors, including increased exposure and access to computers, the deliberate lessening of linguistic barriers, changes in cultural attitudes, and the intense integration of computers into the field of technical writing. (Seventeen references are appended.) (MS)

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ALIENATION AND ADAPTATION:
INTEGRATING TECHNOLOGY AND THE HUMANITIES

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Presented at CCCC, St. Louis, March, 1988

ALIENATION: LINGUISTIC CAUSES OF TECHNOSTRESS

Although most segments of the American workforce now recognize that computers can reduce the drudgery of repetitive tasks and lighten the burden of information exchange, storage, and retrieval, some people remain hesitant to step boldly into the computer age.

This situation is especially true for many humanists, social scientists, and other non-technically oriented professionals. According to a battery of recent investigations, a consistent percentage of these individuals experience increased anxiety when confronted with unfamiliar technologies. In a 1986 report in Electronic Education, for example, only 5% of elementary and secondary Social Studies teachers and 6% of English teachers use computers. In contrast, 12% of elementary and secondary Science teachers and 33% of Business teachers took advantage of the new technology (Becker, 12).

Similar results can be found among college and university professionals, particularly in the fields of humanities and English. In 1982, Cynthia Selfe distributed a questionnaire to faculty members in the humanities department at Michigan Technological University. The survey yielded discouraging statistics: forty-seven percent of these teachers, most of whom taught writing- and reading-intensive courses, had

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"avoided computers in the past"; equal numbers said they were "apprehensive" (44%), felt "stupid" (43%) and "frustrated" (48%) when using computer technology (Selfe 1983). Selfe surmised that these responses from humanities faculty from within a technological university are echoed even more consistently in the attitudes of counterparts at liberal arts schools and in non-academic workplaces.

In 1987, Elizabeth Smith read Selfe's survey at the same university and was puzzled; the department she saw was using computers, and the faculty did not appear to be either intimidated or frightened by the technology. Something seemed to have happened in this department during the five-year interim. The authors, Smith and Selfe wanted to look at possible reasons for the alienation that Selfe originally found, and we wanted to find out if use and attitudes had indeed changed in the five years.

What were the reasons people in English avoided computers in 1982? How and why have things changed? Two of the reasons for avoiding computers seem to stem from the language that surrounds them. The unfamiliar and often unpleasant terminology computers use is intimidating to many people, especially to those who place a high value on language. A second linguistic phenomenon that serves to alienate non-specialists involves the way that language is used to compare people and computers. In the world of computers, humans have become "liveware" and "end users" while machines have become "friendly" and "intelligent."

FATAL ERROR: THE LANGUAGE WE USE TO DEAL WITH COMPUTERS

Certainly one reason people in non-technical fields, such as English, back away from computer use involves the nature of the language and terminology associated with electronic technology. When we, as specialists in print media, find it necessary to deal

with commands, error messages, and technical jargon in order to complete simple tasks on a computer, we confront a major linguistic barrier. This barrier encourages apprehension and alienation among non-specialists, and as a result, computer manufacturers and specialists have disenfranchised an entire segment of society from the technology they hope to promote.

One of the first linguistic barriers non-specialists encounter when they come to the computer is that of commands and messages. The novice computer user who loads a program into a PC and makes a common error may be confronted with the message, "Catastrophic error--Program aborted." This intensity of this message far outweighs the consequences of the situation, promoting the image of a violent and dangerous environment. The general terminology a computer user may encounter during a session at a computer includes a full range of words with military and/or violent origins: execute, load, terminate, kill, escape, crunch, zap, catastrophic error, boot, RAM, abort, fatal error, bomb, crash, or strike (Selfe and Wahlstrom, 1983).

Instead of supporting the image of computers as tools, the language surrounding computers gives the impression that the technology is in charge. For example, common messages on computers are "Illegal Command" and "Bad Filename." The messages, which mean only that no one has programmed the computer to interpret that particular message, imply that users have failed to communicate correctly or clearly. The situation involves no breach of legality, as the word "illegal" implies, or morality, as the word "bad" implies. The language used to relay the message is intimidating, especially for people new to computers, who may consciously or subconsciously react by rejecting the technology altogether.

These linguistic barriers stand in direct contrast to the expectations we develop from the information we recieve in the media. In advertising personal computers and software, companies have lulled the non-technical public into a false sense of security by the advertising promises of continuing support and advice, free introductory classes, readable manuals, and by the names they have given machines.

Computer companies seek simple, familiar names to promote their products: "Apple" (Who could be afraid of an apple?), "Lisa," "Vitamin C" ("C" is a programming language), or "Kiss Plus" (the model of our new laser printer). This illusion of familiarity and friendliness is shortlived, however. When computer boxes are unpacked, sales personnel are too busy making their next pitch to provide adequate on-going support, and when the accompanying documentation proves to be unreadable, the reality quickly sinks in. Professionals who are not familiar with technological advances but who might benefit from microelectronics, find themselves in the midst of a linguistic war where few situations resemble the "user-friendly" atmosphere advertised. No one expects a computer named Lisa to "TERMINATE" or "ABORT" programs. No one wants their Apple to "LOAD" and "EXECUTE" files and commands. Author John Shore claims that computer jargon makes computers harder to approach, and it "contributes to the anxieties of novice users....Not only does this often-unnecessary jargon distract people from the job that they're trying to do, it reinforces their suspicion that they can't do the job without learning all about computers" (Shore, 39-40).

HARDWARE, SOFTWARE, AND LIVEWARE: COMPARING COMPUTERS AND PEOPLE

Another barrier that effectively separates non-technical professionals from computers involves the complex mythology of comparisons between people and machines that has been constructed around computers. This barrier also has linguistic origins. Those professionals who manufacture, program, and sell computers often talk about a machine in terms of the number of people or animals it replaces. Just as we measure a car's energy in horsepower, we measure computer power in terms of "man hours" or "memory." Frequently, lines between machines and humans blur. In 1982, for example, Time magazine chose to name a computer, "Man of the Year."

Not only are machines personified, but people are mechanized, and comparisons between people and technology prove inevitable. Computers, in such a linguistic/mythological system, become "powerful," "fast," "sophisticated," "super." What happens to people in this comparison? Dr. Minskey of the Massachusetts Institute of Technology talks about human brains as "meat computers" [Hooper, 65]. Terms commonly tossed about in computer conferences include "liveware" (human beings), "wetware" (the human brain), and "end-users." Even the federal government contributes to such linguistic destructiveness. NASA, when asked why humans were sent to the moon instead of computers, replied, "Man is the lowest cost 150-pound non-linear all-purpose computer system that can be mass-produced by unskilled labor" [Bear, 96]. Even those people who build, program, and minister to computers linguistically become known as computer architects, programmers, users, system analysts, applications specialists--unlike teachers, social workers, nurses, or writers, their only title lies in reference to the job they do for the machines. The indirect result of the comparison is that people seem less powerful, less efficient, simpler, more fallible, and infinitely slower.

What happens when professionals, such as English teachers reject computers? The impact begins with a loss in sales and support of the computer industry. But more than just a market loss, there are also social and educational implications. Without technology, there may be a significant loss in the exchange of ideas, educational quality, and a dearth of cross-disciplinary projects that would enhance lives by encouraging cooperation and exploration in new areas. For example, some researchers in the field of composition are integrating quantitative research, running statistical analyses on computers, and using the data to support or refute their hypotheses. The technology currently available opens new avenues of study and makes old avenues more accessible, such as studying writing-across-the-curriculum, running demographic data analyses, and studying phenomena across time. It was this sort of integration with technology that we observed in the humanities department at Michigan Tech, five years after Selfe's original study.

ADAPTATION: HUMANITIES TEACHERS AND COMPUTERS

Given the seemingly insurmountable linguistic and technological barriers that confronted English teachers in 1982, what hope was there for change? Yet change apparently has taken place. In 1987, five years after the faculty reported that they had not yet integrated computers into their lives and work, and that they had a high degree of fear and apprehension toward the technology (Selfe 1983), we saw massive changes in both use and attitudes. These changes are reflected throughout the nation. We believe many factors contributed to these changes, including increased exposure and access to computers, the deliberate lessening of linguistic barriers, changes in cultural attitudes, and the intense integration with the field of technical writing. We wanted to see how the faculty used computers, and if their attitudes toward the technology had changed in the interim.

BACKGROUND

In 1982, the humanities department, like most English departments around the country, had limited access to computers. We had two old Terak computers, that even in 1982, were dinosaurs, and only 10 faculty were regular users (Selfe 1983).

As demand grew, and as our profession began to integrate more technology into the field, the computer resources at also grew, and we added computers for graphics and text integration. By 1985, the Michigan Tech department moved into new facilities; among them was the Center for Computer-assisted Language Instruction (CCLI). From 2 pcs in 1982, the CCLI grew to 26 IBM pcs networked together and 4 Macintosh computers. Access to the technology was a key factor in faculty adaptation, not only at Michigan Tech, but also at schools around the country. According to data from the English Microlab Registry, the number of writing-based microlabs grew from 41 to 105 from Fall 1984 to Spring 1986 ("Microlab Facts"), a dramatic increase across the country, in a year and a half.

A second major transition in technology adaptation came from increased quanity and quality of support available to faculty. In the CCLI, along with extensive manuals and technical support, trained student volunteers were on duty a minimum of 82 hours a week (Winter 1986), and often would work extra hours. They helped students and faculty with the computers, document design, and writing. The atmosphere was casual and collaborative.

To counteract the mechanical nature of most computer labs, we can encourage a creative atmosphere We can help dismantle the computer mythology by breaking down the linguistic barriers. (The CCLI approached one linguistic barrier by naming the computers after writers instead of numbering them.) Students in scientific and technical writing can practice their skills by translating complex instructions and jargon into natural

language. They can work with programmers to design computer screens and tailor software to be accessible and easily understood. We can choose software that avoids jargon and power words. For example, the word processing program chosen for the IBM network (Volkswriter III) uses the message "Beg Your Pardon?" instead of "Illegal Command." This support serves to demystify computers and will help non-technical people take advantage of the technology with a minimal amount of fear and apprehension. The linguistic barriers confronting faculty and students can be dismantled, or at least lowered by the support and resources used.

Outside the writing-intensive computer labs, other adaptations to computer technology have been happening. Microcomputers are placed in faculty offices; others are placed in central departmental offices. Connected to the campus system, these computers allow networking and electronic mail. Some faculty bring in their own computers to use at work; others have computers at home.

By Spring, 1987, the Michigan Tech faculty, like the faculty of other pioneering schools, such as Governor's State, Texas Tech University, University of Texas, Oakland, University of Wisconsin--Milwaukee, to name only a few, had integrated computers into their English curriculum. At Michigan Tech, eleven courses in writing and composition were offered as "Computer-Intensive" courses. These courses ranged from first-year English to graduate seminars. Professors kept mailboxes on the computer system, and students recorded journals and class discussions on the system. Three national and international publications produced by the department are now compiled with desk-top publishing technology. Graphic design, publications management, and print shop classes all use computer graphics, text integration, and desk-top publishing to produce camera-ready copy for printing. This explosion of technology increased the accessibility of both computer hardware and software in the department. Faculty have been exposed to

computers in the media, in society, and in their fields. We wanted to find out if computer accessibility and increased support over the past five years changed the faculty's attitude toward the technology.

DEMOGRAPHICS

We surveyed the faculty in the same university department five years after Selfe's original study. Of fifty-five humanities teachers, 58% taught reading- and writing-intensive courses, such as composition and rhetoric, scientific and technical communication, and literature. The humanities faculty at this engineering university spans a wide range of ages, specialties, and computer experience. Some had used computers extensively and for a long time (14-18 years); others had used them minimally or not at all. Over three-quarters of the faculty had used computers, with an average computer experience of 3.38 years.

The faculty have used computers for the following tasks:

78% personal writing/correspondence
70% memos
70% revisions
68% composing
62% classwork
50% collaborative work

42% playing games
38% databases
36% graphics or art
32% programming
32% statistical analysis
30% document design
22% group work
10% other (mostly electronic mail)

These percentages show a variety of applications for a large percentage of the subjects. The categories with less participation are generally more specialized, for example, statistical analysis or databases.

Although we cannot directly compare our 1987 survey to Selfe's 1982 survey because of changes in the population, there appear to have been some important changes in attitude. 70% of the people surveyed disagree with a statement that a computer has made them feel stupid, compared to 35% in 1982. While 54% claimed not to be apprehensive about using computers in 1982, over 70% make this claim in 1987. And over three times as many people said they have used a computer and it was fun--a jump from 24% to 80%.

Not only have attitudes toward technology changed in a positive direction, but more of the negative attitudes have shifted toward a neutral position, and some of the postive attitudes have shifted from glorifying the technology toward the utility of the technology.

Subjects made the statement that computers have made an impact in their field (78%), and they are interested in the quickness and ease of traditional writing and revising text, as well as the current trends, such as desk-top publishing. Seventy percent of the subjects considered computers to be important or very important in writing. Many subjects gave very positive comments about their change in attitude over the last five years, such as

> "Never used one five years ago; now I do all my writing, revising, and database work on them. "

Along with the overwhelmingly positive comments came a high percentage of comments aimed at the utility and convenience, but not with the same enthusiasm:

> "...they are useful tools, but it seems a little silly that we are so enchanted with them...[a computer] is a useful tool for my work, not a panacea."
>
> "They seem to be becoming unavoidable."

Some of the respondents, especially the non-users, had negative comments about the technology and warnings about becoming dependent on technology.

> "I am relatively surprised by the fact that what the computer seems to offer (at least in advertising) just isn't 'here. They are bulky, noisy, and are nearly always located under artificial light, which gives me a headache...."

DISCUSSION

Selfe's original study began with the question, "Why do English teachers and other humanities scholars dance so lightly on the cutting edge of the computer revolution?" (Selfe 1983). It is apparent from the 1987 survey of the department, that with increased exposure to computer technology, and ease of access to computers in the department and classes, faculty have integrated the technology into the department in varying degrees. This department reflects the national trend toward integrating computers into English and other writing-intensive fields. Instead of dancing on the cutting edge, we find ourselves moving toward center stage.

At Michigan Tech, we found there was significant computer use in the department. Second, we found important differences in attitude from five years ago. In 1982, English faculty were apprehensive about computers and avoided them; by 1987, 78% of the faculty had used computers for writing and correspondence. In 1987, faculty had relatively little

fear of computers, much acknowledgement of their accomplishments, and even some cynicism. The attitude changes seem to be based on a complex array of factors: improved access and exposure to the technology; technical support, including lowering linguistic barriers; societal acceptance and integration of the microcomputer in the workplace and home; and the increased integration of computers in fields of scientific and technical communication. Again, this reflects a national trend toward integrating computers into the humanities.

CONCLUSION

Computers are coming into the mainstream of life in English and humanities departments. People are finding new uses for computers, and they are competing for time and resources to use the technology. Methods of teaching, researching, and writing are changing in different degrees, depending on the integration with the technology. The focus of the change in writing is on speed and efficiency; subjects in our study were quick to point out that a change in quality has not been established.

Computer technology is no longer the secretive mystery of the "black box." The fear of computer technology has been lessened by constant exposure and access, and a concerted effort to demystify the technology and reduce the linguistic barriers. There seems to be a shift in attitude toward computers that focuses on utility instead of innovativeness. If true, this trend should cause less differentiation between the "haves" and "have nots." --Less differentiation, and perhaps, a more realistic and humanistic attitude toward microcomputers.

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